Every morning before going to work, the commuter looks at her smartphone to check the amount of charge left in her electric car. Everything in her home—from the air conditioning to the water heater—is optimally controlled by digital technology, reducing operating costs and making housework easier. She then leaves for her office, driving along the stunning coast while gazing at an offshore wind farm. Her office building, distinguished by a solar panel facade, gets all of its electricity from local renewable energy sources.

This is what the lives of the residents of Goto City, consisting of more than 150 islands in Nagasaki Prefecture, will be like in 2050. Goto is one of Japan’s “zero-carbon cities” whose governments have declared that they will reduce their greenhouse gas emissions to net zero by 2050. The Japanese government, which aims for the entire country to achieve carbon neutrality by that year, is providing various types of assistance to zero-carbon cities, including planning, capacity building, and equipment installation.

The number of local governments signing on to the initiative has been increasing rapidly—from four in September 2019 to 444 by August 2021—representing 111.4 million households. The number of local governments signing on to the initiative has been increasing rapidly—from four in September 2019 to 444 by August 2021—representing 111.4 million households.

Zero-carbon cities, at the forefront of a vision to make Japan carbon neutral by 2050, are generating a wave of innovative changes across the country. Taking advantage of its geographical features, Goto City is looking to reduce carbon dioxide emissions while revitalizing the community.

The way in which a particular municipality pursues the zero-carbon city initiative will be designed carefully toward carbon neutrality. This is what the lives of the residents of Goto City, consisting of more than 150 islands in Nagasaki Prefecture, will be like in 2050.

The single floating wind turbine currently in operation in Goto has a maximum power output of 2,000 kW (equivalent to the annual power needs of 1,800 ordinary households). More than 51% of the city’s electricity is already produced by renewable energy sources, which include not only offshore wind power but also others such as solar power. The city plans to build the offshore wind farm by 2023 by expanding the number of floating wind turbines to about 10, which is estimated to result in over 80% of the city’s electricity demands being met by renewable sources.

With the aim to decarbonize the entire region, Goto is also pioneering demonstration projects for tidal power generation and a hydrogen fuel cell ship. The city is also committed to raising the ecological awareness of its residents in order to promote the use of electric vehicles and reduce waste. These efforts have already brought about some positive results: renewable energy is often a topic when local issues are discussed in high school classes, and students have used drones to survey coastal marine litter.

Initiatives for carbon neutrality have already created new employment opportunities in the renewable energy field in Goto, invigorating the city. Recently, many people in their 20s and 30s have been moving to the city, resulting in a positive net migration rate for two consecutive years since 2019. "I want to make a community where each and every industry thrives, and where people will want to continue living, both for the job opportunities and for the sustainable environment," says Murai. Utilizing local strengths and cutting-edge technologies to create societies that protect and nurture both the environment and people, zero-carbon cities are on the cusp of generating a wave of change across the country.

Left: The widespread use of electric vehicles is an inevitable step for Japan as it aims to decarbonize its automobile industry. Goto plans to introduce 200 such vehicles by 2030. Right: A large tidal generator was installed in the offshore waters of Naru-Seto in January 2021. With an output of 590 kW, it is estimated that generation of power of energy in some 500,000 households.

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